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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/656,777	09/07/2000	Junji Kuyama	09793822-0409	1570

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EXAMINER	
WILLS, MONIQUE M	

ART UNIT	PAPER NUMBER
1746	

DATE MAILED: 04/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/656,777	KUYAMA ET AL	
	Examiner	Art Unit	
	Wills M Monique	1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 February 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *23-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *23-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

This Office Action is responsive to the Amendment filed February 5, 2004. The rejection of claims 17-22 under 35 U.S.C. 103(a) as being unpatentable over Miyasaka U.S. Patent 5,869,208 and further in view of Tanno U.S. Patent 5,853,918, is overcome. The rejection of claims 10 and 12-16 under 35 U.S.C. 102(b) as being anticipated by Miyasaka U.S. Patent 5,869,208, is overcome. Newly added claim 27 is objected to because of a minor informality. The new grounds of rejections are as follows:

- Claims 23-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
- Claim 23-25, 29-31 & 33-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Isoyama et al., U.S. Patent 6,093,503.
- Claims 27, 28 & 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isoyama et al. U.S. Patent 6,093,503 as applied to claims 23 & 29 above, in view of Miyasaka U.S. Patent 5,869,208.

Claim Objections

Claim 27 is objected to because of the following informalities: "polyvinylidene fluoride" is misspelled. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 23-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 23 & 29, the term " lithium composite manganese oxide of about 86% by weight of the lithium composite manganese oxide" is of uncertain meaning rendering the claims vague and indefinite. The Examiner interprets the language to mean the lithium manganese oxide constitutes 86% by weight of the positive active material.

Claim Interpretation

In claims 23 & 29, the term " lithium composite manganese oxide of about 86% by weight of the lithium composite manganese oxide" is of uncertain meaning. The Examiner interprets the language to mean that the lithium manganese oxide constitutes 86% by weight of the positive active material.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 23-25, 29-31 & 33-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Isoyama et al., U.S. Patent 6,093,503.

With respect to claims 23 & 29, Isoyama teaches a method of making a positive electrode active material comprising: mixing a first ingredient of Ketjen Black and 90% by weight of lithium manganese oxide (Example 22), embracing "about 86%" by weight of lithium manganese oxide; press molding the mixture (col. 12, lines 5-10); sintering the mixture in a temperature range from 300 to 1200°C (col. 7, lines 57-68); wherein the positive electrode is a lithium composite manganese oxide comprising an aggregate (col. 2, lines 12-20) of primary particles having a grain diameter of 1 to 20 microns; and the negative electrode is metallic lithium (col. 2, lines 30-40). Further concerning claim 23, the lithium composite oxide is $LiMn_2O_4$ meeting the general formula $Li_xMn_{2-y}M_yO_4$ when x=1 and y=0. Further concerning claim 29, the negative electrode includes coke and an organic polymer compound sintered body (col. 23, lines 8-20). With respect to claims 24 & 25, the spinel $LiMn_2O_4$ (col. 6, lines 25-30) has a

primary particle size of 1 to 20 microns, embracing a primary particle diameter of 0.5 to 3 microns. Specific particle sizes of about 1 to 3 microns are exemplified in column 29, lines 45-50. With respect to claim 31, the negative electrode is metallic lithium (col. 2, lines 30-40). With respect to claim 33, the electrolyte salts include $LiClO_4$, $LiBF_6$, $LiPF_6$, $LiCF_3SO_3$ and $LiAsF_6$ (col. 5, lines 40-45). Regarding claim 34, the electrolyte is dissolved in an organic solvent selected from propylene carbonate, diethyl carbonate and gamma-butyrolactone (col. 5, lines 41-46). The limitations are anticipated by the prior art set forth. The limitation in claims 23 & 29, with respect to the specific surface area measured by BET between 0.2 m^2/g and 2 m^2/g, is considered to be an inherent property of the cathode material as set forth in the prior art, because Isoyama employs the same lithium manganese oxide material with the same primary particle size as set forth by Applicant. The limitation in claims 23,29 & 30, with respect to the negative electrode material reversibly doping and dedoping lithium, is considered to be an inherent property of the negative electrode as set forth in the prior art, because Isoyama employs the same lithium anodic material set forth by Applicant. Additionally, "products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 27, 28 & 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isoyama et al. U.S. Patent 6,093,503 as applied to claims23 & 29 above, in view of Miyasaka U.S. Patent 5,869,208.

Isoyama teaches a method of making a positive active material as described hereinabove. The method includes creating a slurry by kneading an admixture of graphite and polyvinylidene fluoride (col. 5, line 35 & col. 39, lines 10-20) with $LiMn_2O_4$ dissolved in a liquid phase (col. 39, lines 5-20). The lithium oxide, conductive agent and binder are mixed in a weight ratio of 9: 0.6 to 0.4 (col. 39, lines 10-20). With respect to claim 28, cathode material is applied to an aluminum foil current collector (col. 39, lines 10-15) with a thickness of 0.02 to 200 microns.

Isoyama is silent to creating a slurry of active material, binder and conductive agent (claims 27 & 32), employing 86 % lithium composite manganese oxide (claim 27) and 10% graphite (claims 27 & 32). The reference is also silent to pulverizing the sintered mixture (claim 26).

Miyasaka teaches that it is conventional to create a slurry of electrode material prior to coating on a current collector (col. 12, lines 5-15). The electrode material includes lithium manganese oxide, a binder and conductive agent (col. 12, lines 5-15). The reference also teaches pulverizing to increase the specific surface area of the active material (col. 11, lines 20-30).

It would have been obvious to one having ordinary skill in the art at the time the instant invention was made to employ the slurry preparation of Miyasaka in the method of Isoyama, in order to facilitate coating electrode material on the current collector. The skilled artisan recognizes that a slurry would increase malleability of the active material, thereby improving the coating ability of said material on the current collector (claims 27 7 32).

With respect to pulverizing sintered electrode material, (claim 26) the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made, because even though Isoyama is silent to pulverizing the active material, Miyasaka teaches that pulverization increases the specific surface area of the active material (col. 11, lines 20-30).

With respect to the amount of lithium manganese oxide, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ 86 % by weight lithium manganese oxide since it has been held that discovering optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980). The skilled artisan recognizes that

the amount of active material directly effects the amount of voltage and current produced by the cell.

With respect to the amount of graphite, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ 10 % by weight of graphite since it has been held that discovering optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980). The skilled artisan recognizes that the amount of conductive agent directly effects conductivity of the electrode.

Response to Arguments

The rejection of claims 17-22 under 35 U.S.C. 103(a) as being unpatentable over Miyasaka U.S. Patent 5,869,208 and further in view of Tanno U.S. Patent 5,853,918, and the rejection of claims 10 and 12-16 under 35 U.S.C. 102(b) as being anticipated by Miyasaka U.S. Patent 5,869,208, are overcome in light of the fact that claims 10-22 have been cancelled.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (571) 272-1309. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Randy Gulakowski, may be reached at 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mw

04/11/04

Bruce Bell

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